Partial discharge behavior evaluation of ultralight dielectrics for UHVDC and UHV applications

Master and Bachelor Thesis (English/Deutsch)

Due to the considerable sizes of UHV (Ultra High Voltage) Station Post Insulators, the only viable solution are hollow-core composite insulators (HCI). These insulators can reach heights of 13 meters and must be filled to avoid surface discharges due to humidity ingress. The conventional approach is to fill the inner room of the insulator with SF₆ gas. However, the electrical power industry is stopping using it due to its GWP Global Warming Potential.

A novel promising ultra-light material will be used during this thesis. For a better understanding of the potential industrial use of the material, the partial discharge (PD) behavior has to be studied in detail.

In the framework of this thesis, specimens with the novel material will be manufactured and stressed with HV to measure its PD response.

Goals and focus of the thesis:
Your focus and core tasks will be:

- Literature research regarding partial discharge mechanisms
- Design and manufacture of specimens
- Experimental investigation of the manufactured materials
- Documentation of the performed works

Your Profile:

- Study in Engineering, Business Administration & Engineering or Computer Sciences
- Previous experience regarding laboratory work is advantageous

Contact

Diego Machetti, M.Sc.
+49 241 80 - 92949
d.machetti@iaew.rwth-aachen.de

Focus

- Laboratory work
- Low-density materials
- HV engineering
- Partial discharges